

WHAT IS CLAIMED IS:

1. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of an active circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of the active circuit at the immediately-preceding-stage of the antenna and an output terminal of an active circuit at a preceding-stage of the active circuit at the immediately-preceding-stage of the antenna.

2. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a active circuit block made up of a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit block and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of a final-stage active circuit of the active circuit block and an output terminal of an active circuit at a preceding-stage of the active circuit at the final-stage of the active circuit block.

3. The wireless communications apparatus as set forth in claim 1, wherein:

the active circuit placed at the immediately-preceding-stage of the antenna is a power amplifier.

4. The wireless communications apparatus as set forth in claim 2, wherein:

the final-stage active circuit of the active circuit block is a power amplifier.

5. A wireless communications apparatus, comprising:

a reception circuit block including an antenna and a plurality of active circuits,

wherein:

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of an active circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit at the immediately-following-stage of the antenna and an input terminal of an active circuit at a following-stage of the active circuit at the immediately-following-stage of the antenna.

6. A wireless communications apparatus, comprising:

a reception circuit block including an antenna and an active circuit block made up of a plurality of active circuits,

wherein:

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of the active circuit block is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of a first-stage active

circuit of the active circuit block and an input terminal of a second-stage active circuit of the active circuit block.

7. The wireless communications apparatus as set forth in claim 5, wherein:

the active circuit placed at the immediately-following-stage of the antenna is a low-noise amplifier.

8. The wireless communications apparatus as set forth in claim 6, wherein:

the first-stage active circuit of the active circuit block is a low-noise amplifier.

9. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a plurality of active circuits; and

a reception circuit block including an antenna and a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of an active circuit placed at an immediately-preceding-stage of the antenna

and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of the active circuit at the immediately-preceding-stage of the antenna and an output terminal of an active circuit at a preceding-stage of the active circuit at the immediately-preceding-stage of the antenna; and

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of an active circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit at the immediately-following-stage of the antenna and an input terminal of an active circuit at a following-stage of the active circuit at the immediately-following-stage of the antenna.

10. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a active circuit block made up of a plurality of active circuits; and

a reception circuit block including an antenna and a

active circuit block made up of a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit block and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of a final-stage active circuit of the active circuit block and an output terminal of an active circuit at a preceding-stage of the final-stage active circuit of the active circuit block; and the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of the active circuit block is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of a first-stage active circuit of the active circuit block and an input terminal of a second-stage active circuit of the active circuit block.

11. The wireless communications apparatus as set forth in claim 1, wherein,

the transmission circuit block is laid out so that a part or entire of circuit blocks from the active circuit at

the immediately-preceding stage of the antenna to the antenna are formed on a substrate different from a substrate on which the active circuit at the preceding-stage of the active circuit at the immediately-preceding-stage of the antenna is formed.

12. The wireless communications apparatus as set forth in claim 2, wherein,

the transmission circuit block is laid out so that a part or entire of circuit blocks from the final-stage active circuit of the active circuit block to the antenna are formed on a substrate different from a substrate on which an active circuit at a preceding-stage of the active circuit block is formed.

13. The wireless communications apparatus as set forth in claim 1, wherein,

the transmission circuit block is laid out so that a part or entire of circuit blocks from the active circuit at the immediately-preceding stage of the antenna to the antenna are formed as one circuit block different from a circuit block in which the active circuit at the preceding-stage of the active circuit at the immediately-preceding-stage of the antenna is formed.

14. The wireless communications apparatus as set forth in claim 2, wherein,

the transmission circuit block is laid out so that a part or entire of circuit blocks from the final-stage active circuit of the active circuit block to the antenna are formed as one circuit block different from a circuit block in which an active circuit at a preceding-stage of the active circuit block is formed.

15. The wireless communications apparatus as set forth in claim 5, wherein,

the reception circuit block is laid out so that a part or entire of circuit blocks from the antenna to the active circuit at the immediately-following stage of the antenna are formed on a substrate different from a substrate on which the active circuit at the following-stage of the active circuit at the immediately-following-stage of the antenna is formed.

16. The wireless communications apparatus as set forth in claim 6, wherein,

the reception circuit block is laid out so that a part or entire of circuit blocks from the antenna to the first-stage active circuit of the active circuit block are formed on a substrate different from a substrate on which



the active circuit at a following-stage of the active circuit block is formed.

17. The wireless communications apparatus as set forth in claim 5, wherein,

the reception circuit block is laid out so that a part or entire of circuit blocks from the antenna to the active circuit at the immediately-following stage of the antenna are formed as one circuit block different from a circuit block in which the active circuit at the following-stage of the active circuit at the immediately-following-stage of the antenna is formed.

18. The wireless communications apparatus as set forth in claim 6, wherein,

the reception circuit block is laid out so that a part or entire of circuit blocks from the antenna to the first-stage active circuit of the active circuit block are formed as one circuit block different from a circuit block in which the active circuit at a following-stage of the active circuit block is formed.

19. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna

and a plurality of active circuits; and  
a reception circuit block including an antenna and a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of an active circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of the active circuit at the immediately-preceding-stage of the antenna and an output terminal of an active circuit at a preceding-stage of the active circuit at the immediately-preceding-stage of the antenna; and a part or entire of circuit blocks from the active circuit at the immediately-preceding stage of the antenna to the antenna are formed on a substrate different from a substrate on which the active circuit at the preceding-stage of the active circuit at the immediately-preceding-stage of the antenna is formed, and

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of an active circuit placed at an immediately-following-stage of the antenna is shorter than

a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit at the immediately-following-stage of the antenna and an input terminal of an active circuit at a following-stage of the active circuit at the immediately-following-stage of the antenna; and a part or entire of circuit blocks from the antenna to the active circuit at the immediately-following stage of the antenna are formed on a substrate different from a substrate on which the active circuit at the following-stage of the active circuit at the immediately-following-stage of the antenna is formed.

20. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a active circuit block made up of a plurality of active circuits; and

a reception circuit block including an antenna and a active circuit block made up of a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit block and an input terminal of the antenna is shorter

than a combined length of transmission lines connecting circuit blocks between an input terminal of a final-stage active circuit of the active circuit block and an output terminal of an active circuit at a preceding-stage of the final-stage active circuit of the active circuit block; and a part or entire of circuit blocks from the final-stage active circuit of the active circuit block to the antenna are formed on a substrate different from a substrate on which an active circuit at a preceding-stage of the active circuit block is formed, and

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of the active circuit block is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of a first-stage active circuit of the active circuit block and an input terminal of a second-stage active circuit of the active circuit block; and a part or entire of circuit blocks from the antenna to the first-stage active circuit of the active circuit block are formed on a substrate different from a substrate on which the active circuit at a following-stage of the active circuit block is formed..

21. A wireless communications apparatus,

comprising:

a transmission circuit block including an antenna and a plurality of active circuits; and

a reception circuit block including an antenna and a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of an active circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of the active circuit at the immediately-preceding-stage of the antenna and an output terminal of an active circuit at a preceding-stage of the active circuit at the immediately-preceding-stage of the antenna; and a part or entire of circuit blocks from the active circuit at the immediately-preceding stage of the antenna to the antenna are formed as one circuit block different from a circuit block in which the active circuit at the preceding-stage of the active circuit at the immediately-preceding-stage of the antenna is formed, and the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input

terminal of an active circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of the active circuit at the immediately-following-stage of the antenna and an input terminal of an active circuit at a following-stage of the active circuit at the immediately-following-stage of the antenna; and a part or entire of circuit blocks from the antenna to the active circuit at the immediately-following stage of the antenna are formed as one circuit block different from a circuit block in which the active circuit at the following-stage of the active circuit at the immediately-following-stage of the antenna is formed.

22. A wireless communications apparatus, comprising:

a transmission circuit block including an antenna and a active circuit block made up of a plurality of active circuits; and

a reception circuit block including an antenna and a active circuit block made up of a plurality of active circuits,

wherein:

the transmission circuit block is laid out so that a combined length of transmission lines connecting circuit

blocks between an output terminal of the active circuit block and an input terminal of the antenna is shorter than a combined length of transmission lines connecting circuit blocks between an input terminal of a final-stage active circuit of the active circuit block and an output terminal of an active circuit at a preceding-stage of the final-stage active circuit of the active circuit block; and a part or entire of circuit blocks from the final-stage active circuit of the active circuit block to the antenna are formed as one circuit block different from a circuit block in which an active circuit at a preceding-stage of the active circuit block is formed, and

the reception circuit block is laid out so that a combined length of transmission lines connecting circuit blocks between an output terminal of the antenna and an input terminal of the active circuit block is shorter than a combined length of transmission lines connecting circuit blocks between an output terminal of a first-stage active circuit of the active circuit block and an input terminal of a second-stage active circuit of the active circuit block; and a part or entire of circuit blocks from the antenna to the first-stage active circuit of the active circuit block are formed as one circuit block different from a circuit block in which the active circuit at a following-stage of the active circuit block is formed.

23. The wireless communications apparatus as set forth in claim 1, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

24. The wireless communications apparatus as set forth in claim 2, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

25. The wireless communications apparatus as set forth in claim 5, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.



26. The wireless communications apparatus as set forth in claim 6, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

27. The wireless communications apparatus as set forth in claim 9, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

28. The wireless communications apparatus as set forth in claim 10, wherein,

one of the circuit blocks is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

29. The wireless communications apparatus as set

forth in claim 1, wherein,  
the antenna is a linear antenna.

30. The wireless communications apparatus as set forth in claim 2, wherein,  
the antenna is a linear antenna.

31. The wireless communications apparatus as set forth in claim 5, wherein,  
the antenna is a linear antenna.

32. The wireless communications apparatus as set forth in claim 6, wherein,  
the antenna is a linear antenna.

33. The wireless communications apparatus as set forth in claim 9, wherein,  
the antenna is a linear antenna.

34. The wireless communications apparatus as set forth in claim 10, wherein,  
the antenna is a linear antenna.

35. The wireless communications apparatus as set forth in claim 1, wherein,

a length of the transmission lines connecting circuit blocks is represented by a high-frequency transmission loss.

36. The wireless communications apparatus as set forth in claim 2, wherein,

a length of the transmission lines connecting circuit blocks is represented by a high-frequency transmission loss.

37. The wireless communications apparatus as set forth in claim 5, wherein,

a length of the transmission lines connecting circuit blocks is represented by a high-frequency transmission loss.

38. The wireless communications apparatus as set forth in claim 6, wherein,

a length of the transmission lines connecting circuit blocks is represented by a high-frequency transmission loss.

39. The wireless communications apparatus as set forth in claim 9, wherein,

a length of the transmission lines connecting circuit

blocks is represented by a high-frequency transmission loss.

40. The wireless communications apparatus as set forth in claim 10, wherein,

a length of the transmission lines connecting circuit blocks is represented by a high-frequency transmission loss.

41. An information processing terminal apparatus with a wireless application, comprising:

a wireless application section; and

an antenna section that includes an antenna and is physically separated from the wireless application section, wherein:

the antenna constitutes a front end section together with an active circuit at the immediately preceding/following stage of the antenna, the front end section being separated from the wireless application section and being placed either on a same substrate on which the antenna section is provided, or in the vicinity of the antenna section.